

# PATENT

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Name of Person Signing

October 27, 1999  
Date of Signature

## **IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant : Peter M. Bonutti  
Filing Date : herewith  
For : METHOD OF SECURING TISSUE  
Group Art Unit : 3732(?)  
Examiner : E. Robert (?)  
Attorney Docket No. : BON-4250-1

(This application is a continuation of application Serial No. 09/370,865 filed August 9, 1999.)

Assistant Commissioner for Patents  
Washington, D.C. 20231

## **PRELIMINARY AMENDMENT**

Sir:

Before action, please amend the above-identified application as follows:

### **In the Specification:**

Please insert the following paragraph in the specification after the title of the application and before the subtitle "Background of the Invention":

### **Related Application**

This application is a continuation of application Serial No. 09/370,865 filed August 9, 1999. The benefit of the earlier filing date of the aforementioned application Serial No. 09/370,865 is hereby claimed.

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**In the Claims:**

Please cancel claims 2-4, 15, 18-21, 23-25, 31-45, and 88-91 without prejudice.

Please add the following claims:

101. A method of securing tissue against movement relative to a portion of a bone in a patient's body, said method comprising the steps of positioning at least a portion of a retainer member formed of bone in a tubular member, moving at least a portion of the retainer member formed of bone out of the tubular member into the portion of the bone in the patient's body, and connecting the retainer member formed of bone with the tissue to be secured.

102. A method as set forth in claim 101 wherein said step of moving at least a portion of the retainer member formed of bone out of the tubular member into the portion of the bone in the patient's body includes forming an opening in the portion of the bone in the patient's body with a leading end portion of the retainer member formed of bone.

103. a method as set forth in claim 101 wherein said step of moving at least a portion of the retainer member formed of bone out of the tubular member into the portion of the bone in the patient's body includes initiating formation of an opening in the portion of the bone in the patient's body.

104. A method as set forth in claim 101 further including the step of removing a hard surface area from a location on the portion of the bone in the patient's body, said step of moving at least a portion of the retainer member formed of bone into the portion of the bone in the patient's body includes

transmitting force from an end portion of the retainer member formed of bone to the portion of the bone in the patient's body at the location where the hard surface area was removed.

105. A method as set forth in claim 101 wherein said step of moving at least a portion of the retainer member formed of bone into the portion of the bone in the patient's body includes rotating the retainer member formed of bone about a central axis of the retainer member formed of bone.

106. A method as set forth in claim 101 wherein said step of moving at least a portion of the retainer member formed of bone into the portion of the bone in the patient's body includes applying an axially directed force against the retainer member formed of bone and pushing material of the portion of the bone in the patient's body aside under the influence of the axially directed force without rotating the retainer member formed bone about a central axis of the retainer member formed of bone.

107. A method as set forth in claim 101 wherein said step of moving at least a portion of the retainer member formed of bone into the portion of the bone in the patient's body includes moving at least a portion of the bone in the patient's body into cancellous bone enclosed by the compact outer layer.

108. A method as set forth in claim 101 wherein said steps of moving at least a portion of the retainer member formed of bone out of the tubular member into the portion of the bone in the patient's body and connecting the retainer member formed of bone with the tissue to be secured include moving a portion of

the retainer member formed of bone through the portion of the bone in the patient's body into the tissue to be secured.

109. A method as set forth in claim 101 wherein said steps of moving at least a portion of the retainer member formed of bone out of the tubular member into the portion of the bone in the patient's body and connecting the retainer member formed of bone with the tissue to be secured include moving a portion of the retainer member formed of bone through a first portion of the bone in the patient's body.

110. A method as set forth in claim 101 wherein the bone in the patient's body is divided into a first portion and a second portion by a fracture and the tissue to be secured is the second portion of the bone, said steps of moving at least a portion of the retainer member formed of bone out of the tubular member into the portion of the bone in the patient's body and connecting the retainer member formed of bone with the tissue to be secured include moving a portion of the retainer member through the first portion of the bone into the second portion of the bone.

111. A method as set forth in claim 101 wherein the portion of a bone in the patient's body is a first bone and the tissue to be secured is a second bone in the patient's body, said steps of moving at least a portion of the retainer member formed of bone into the portion of the bone in the patient's body and connecting the retainer member formed of bone with the tissue to be secured includes moving a portion of the retainer member through the first bone into the second bone to prevent relative movement between the first and second bones.

112. A method as set forth in claim 111 further including the step of breaking the retainer member formed of bone to enable relative movement to occur between the first and second bones.

113. A method as set forth in claim 101 wherein said step of connecting the retainer member formed of bone with the tissue to be secured includes transmitting force between the tissue to be secured and the retainer member through a suture.

114. A method as set forth in claim 113 wherein said step of positioning the retainer member formed of bone in the patient's body includes moving the retainer member formed of bone through a compact outer layer of bone into cancellous bone and changing the orientation of the retainer member formed of bone relative to the compact outer layer of bone after performing said step of moving the retainer member formed of bone through the compact outer layer into cancellous bone.

115. A method as set forth in claim 114 wherein said step of transmitting force between the tissue to be secured and the retainer member through a suture includes maintaining the retainer member in a spaced apart relationship with the compact outer layer of the bone in the patient's body under the influence of force applied against the retainer member formed of bone by the cancellous bone.

116. A method as set forth in claim 101 wherein said step of moving at least a portion of the retainer member formed of bone out of the tubular member into the portion of the bone in the patient's body includes moving a leading end portion of the retainer member formed of bone in to the portion of the retainer

member formed of bone in to the portion of the bone in the patient's body and interrupting movement of the retainer member formed of bone into the portion of the bone in the patient's body when the leading end portion of the retainer member formed of bone has moved a predetermined distance into the portion of the bone disposed in the patient's body.

117. A method as set forth in claim 101 wherein said step of moving at least a portion of the retainer member formed of bone out of the tubular member into the portion of the bone in the patient's body includes moving a thin elongated member into the portion of the bone in the patient's body and guiding movement of the retainer member formed of bone in to the portion of the bone in the patient's body with the thin elongated member.

118. A method as set forth in claim 101 wherein said step of connecting the retainer member formed of bone with the tissue to be secured includes moving the tubular member into the tissue to be secured, and applying force to the tubular member to tension the tissue to be secured, said step of moving at least a portion of the retainer member formed of bone into the portion of the bone in the patient's body is performed while continuing to tension the tissue to be secured.

119. A method as set forth in claim 118 further including the step of disengaging the tubular member from the tissue to be secured and the retainer member formed of bone after performing said step of moving at least a portion of the retainer member formed of bone into the portion of the bone in the patient's body.

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120. A method of securing tissue against movement relative to a portion of a bone in a patient's body, said method comprising the steps of moving a retainer member formed of bone into the portion of the bone in the patient's body under the influence of force applied against a trailing end portion of the retainer member formed of bone, said step of moving the retainer member formed of bone into the portion of the bone in the patient's body under the influence of force applied against the trailing end portion of the retainer member formed of bone includes initiating formation of an opening in the portion of the bone in the patient's body by transmitting force from a leading end portion of the retainer member formed of bone to the portion of the bone in the patient's body and enlarging the opening by continuing to transmit force from the leading end portion of the retainer member formed of bone to the portion of the bone in the patient's body, and connecting the retainer member formed of bone with the tissue to be secured.

121. A method as set forth in claim 120 further including the step of removing a hard surface area from a location on the portion of the bone in the patient's body, said step of initiating formation of an opening in the portion of the bone in the patient's body includes transmitting force from the leading end portion of the retainer member formed of bone to the portion of the bone in the patient's body at the location where the hard surface area was removed.

122. A method as set forth in claim 120 wherein said step of moving the retainer member formed of bone in to the portion of the bone in the patient's body includes moving at least a portion of the retainer member through a compact outer layer of the portion of the bone into cancellous bone enclosed by the compact outer layer.

123. A method as set forth in claim 120 wherein said step of connecting the retainer member formed of bone with tissue to be secured includes moving a portion of the retainer member formed of bone into the tissue to be secured and transmitting force between an outer side surface area on the retainer member formed of bone and the tissue to be secured.

124. A method as set forth in claim 120 further including the step of interrupting movement of the retainer member formed of bone in to the portion of the bone in the patient's body when the leading end portion of the retainer member formed of bone has moved a predetermined distance in to the portion of the bone disposed in the patient's body.

125. A method of securing tissue against movement relative to a portion of a bone in a patient's body, said method comprising the steps of moving a retainer member formed of bone into the portion of the bone in the patient's body, and connecting the retainer member formed of bone with the tissue to be secured, said step of moving a retainer member formed of bone into the portion of the bone in the patient's body includes deflecting material of the portion of the bone disposed in the patient's body under the influence of force transmitted through the retainer member formed of bone without rotating the retainer member formed of bone relative to the portion of the bone in the patient's body and interrupting movement of the retainer member formed of bone relative to the portion of the bone in the patient's body with the retainer member formed of bone disposed in engagement with the portion of the bone in the patient's body.

126. A method as set forth in claim 125 wherein said step of moving a retainer member formed of bone into the portion of the bone in the patient's body

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includes utilizing the retainer member formed of bone to initiate formation of an opening in a compact outer layer of the portion of the bone in the patient's body.

127. A method as set forth in claim 125 wherein said step of moving a retainer member formed of bone into the portion of the bone in the patient's body at least partially includes enclosing the retainer member formed of bone with a tubular member, and moving a leading end portion of the retainer member formed of bone into the portion of the bone in the patient's body under the influence of force applied against a trailing end portion of the retainer member formed of bone while the retainer member formed of bone is at least partially enclosed by the tubular member.

128. A method as set forth in claim 125 further including the step of interrupting movement of the retainer member formed of bone into the portion of the bone in the patient's body when a leading end portion of the retainer member formed of bone has moved a predetermined distance into the portion of the bone in the patient's body.

129. A method of securing tissue against movement relative to a portion of a bone in a patient's body, said method comprising the steps of initiating formation of an opening in the portion of the bone in the patient's body by applying force against the portion of the bone in the patient's body with an end of a retainer member formed of bone, moving at least a portion of the retainer member formed of bone into the opening initiated in the portion of the bone in the patient's body by the retainer member formed of bone, and connecting the retainer member formed of bone with the tissue to be secured.

130. A method as set forth in claim 129 further including the step of removing a hard surface area from a location on the portion of the bone in the patient's body, said step of initiating formation of an opening in the portion of the bone in the patient's body includes transmitting force from the end of the retainer member formed of bone to the portion of the bone in the patient's body at the location where the hard surface area was removed.

131. A method as set forth in claim 130 wherein said step of transmitting force from the end of the retainer member formed of bone to the portion of the bone in the patient's body includes rotating the retainer member formed of bone about a central axis of the retainer member formed of bone.

132. A method as set forth in claim 130 wherein said step of transmitting force from the end of the retainer member formed of bone to the portion of the bone in the patient's body includes pushing material of the portion of the bone in the patient's body aside under the influence of force transmitted from the retainer member formed of bone.

133. A method as set forth in claim 129 wherein said step of moving at least a portion of the retainer member formed of bone into the portion of the bone in the patient's body is performed without rotating the retainer member formed of bone about a longitudinal central axis of the retainer member formed of bone.

134. A method as set forth in claim 129 wherein said step of connecting the retainer member formed of bone with tissue to be secured includes moving a portion of the retainer member formed of bone into the tissue to be secured and

transmitting force between an outer side surface area on the retainer member formed of bone and the tissue to be secured.

135. A method as set forth in claim 129 wherein said step moving at least a portion of the retainer member formed of bone into the opening initiated in the portion of the bone in the patient's body by the retainer member formed of bone includes moving a leading end portion of the retainer member formed of bone into the portion of the bone in the patient's body and interrupting movement of the retainer member formed of bone into the portion of the bone in the patient's body when the leading end portion of the retainer member formed of bone has moved a predetermined distance into the portion of the bone disposed in the patient's body.

136. A method as set forth in claim 129 wherein the retainer member formed of bone includes a shank portion and a head end portion which projects radially outward from the shank portion, said step of connecting the retainer member formed of bone with the tissue to be secured includes pressing the head end portion of the retainer member formed of bone against the tissue to be secured.

137. A method as set forth in claim 129 wherein said step of connecting the retainer member formed of bone with the tissue to be secured includes engaging the tissue to be secured with the retainer member formed of bone prior to performing said step of initiating formation of an opening in the portion of the bone in the patient's body.

138. A method as set forth in claim 129 wherein said step of connecting the retainer member formed of bone with the tissue to be secured is performed

after performance of said step of initiating formation of an opening in the portion of the bone in the patient's body.

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**REMARKS**

This amendment is being submitted before action in order to expedite the prosecution of this application. If for any reason the Examiner believes that a telephone conference would expedite the prosecution of this application, it is respectfully requested that the Examiner call applicant's attorneys in Cleveland, Ohio at 621-2234, area code 216. Please charge any deficiency in the fees for this application to our Deposit Account No. 20-0090.

Respectfully submitted,



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**CLEAN VERSION**

Please add the following paragraph to page 1 of the specification after the title and before the subtitle "Background of the Invention":

**Related Application**

This application is a continuation of application Serial No. 09/370,865 filed august 9, 1999. The benefit of the earlier filing date of the aforementioned application Serial No. 09/370,865 is hereby claimed.

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